

SITE: Bypass 601
BREAK: 8.6
OTHER: _____

FIVE-YEAR REVIEW REPORT

**BYPASS 601 GROUNDWATER CONTAMINATION SITE
CONCORD, CABARRUS COUNTY,
NORTH CAROLINA**

June 2002



**Prepared by
U.S. Environmental Protection Agency
Region IV
Atlanta, Georgia**

Approved by:

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6/25/02

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List of Acronyms

ACL	Alternate Concentration Limit
ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
MCL	Maximum Contaminant Level
NC DENR	North Carolina Department of Environment and Natural Resources
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
POTW	Publicly Owned Treatment Works
PRP	Potentially Responsible Party
PSD	Performing Settling Defendant
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound

Executive Summary

The remedy for the Bypass 601 Groundwater Contamination Site in Concord, North Carolina included excavation and solidification/stabilization of contaminated soil from off-site source areas; consolidation of treated soils on the Martin Scrap Recycling facility and Source Area #5; placement of an impermeable cap on the consolidated soils; establishment of alternate concentration limits (ACLs) for groundwater; and periodic monitoring of groundwater to include natural attenuation parameters. The site achieved construction completion with the signing of the Preliminary Close Out Report on March 11, 1999. The trigger for this five-year review was the start of remedial activities on September 29, 1997.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD). Two ROD amendments were issued to change the remedy to the above mentioned requirements. The remedy is functioning as designed and remains protective of human health and the environment.

Five-Year Review Summary Form

Site Identification		
Site name: Bypass 601 Groundwater Contamination Site		EPA ID: NCD044440303
Region: 4	State: NC	City/County: Concord/Cabarrus County
Site Status		
NPL status: Final		
Remediation status (under construction, operating, complete): Complete		
Multiple OU's* (highlight): <input checked="" type="checkbox"/> Y N Number of OU's: 2		
Construction completion date: 3/11/99		
Fund/PRP/Federal facility lead: PRP	Lead agency: EPA Region IV	
Has site been put into reuse? (highlight): <input checked="" type="checkbox"/> Y N		
Review Status		
Lead Agency (EPA Region, State, Federal agency): EPA Region 4		
Author name: Giezelle Bennett	Author title: Remedial Project Manager	
Author affiliation: EPA Region 4		
Review period: 2/02 - 6/02		Date(s) of site inspection: 5/22/02
Highlight: Statutory Policy	Type of Review: Pre-SARA Post-SARA NPL - Removal only Regional Discretion	Review Number (1,2, etc.) 1
Triggering action event: RA start		
Trigger action date: Sept 29, 1997		Due date: September 2002

* ["OU" refers to operable unit.]

Issues:

- Deed restrictions have not been completely implemented across the entire site.

Recommendations and Follow-up Actions:

- Reduce the sampling frequency of monitoring wells and surface water/sediment from quarterly to semi-annually;
- Remove the requirement to analyze for the contaminant "benzene" in groundwater;
- Finalize implementation of deed restrictions across the entire site.

Protectiveness Statements:

All immediate threats at the site have been addressed, and the remedy is expected to continue to be protective of human health and the environment.

Long-term Protectiveness:

Long-term protectiveness of the remedial action will be verified by performing TCLP tests on solidified/stabilized materials and obtaining groundwater samples to verify that the contaminants remain below the established ACLs.

Other Comments:

EPA and NC DENR will continue to oversee the periodic groundwater sampling and maintenance of the cap.

Bypass 601 Groundwater Contamination Site Concord, North Carolina First Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-year review reports. In addition, Five-year review reports identify issues found during the review, if any, and identify recommendations to address them.

The Agency is preparing this Five-year review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The United States Environmental Protection Agency (EPA), Region 4, conducted the five-year review of the remedy implemented at the Bypass 601 Site in Concord, North Carolina. This review was conducted by the Remedial Project Manager (RPM) for the entire site from February 2002 through June 2002. This report documents the results of the review.

This is the first five-year review for the Bypass 601 Site. The triggering action for this statutory review is the initiation of the remedial action on September 29, 1997. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 lists the chronology of events for the Bypass 601 Site.

Table 1: Chronology of Site Events

Date	Event
8/80	Initial site discovery
6/10/86	NPL listing
8/90	RI/FS completion Operable Unit 1
8/31/90	ROD signature Operable Unit 1
9/90	Remedial design start Operable Unit 1
9/91	Remedial design completion Operable Unit 1
2/92 - 3/92	Immediate Removal by EPA
4/93	RI/FS completion Operable Unit 2
4/20/93	ROD signature Operable Unit 2
1/25/95	Consent Decree Operable Unit 2
10/94	Remedial design start Operable Unit 2
9/96 - 11/96	Interim Removal by PRPs
4/18/97	ROD amendment signature Operable Units 1 & 2
9/29/97	Remedial design completion Operable Unit 2
3/98 - 1/99	Operable Unit 2 construction dates
9/28/98	Partial NPL deletion
3/11/99	Construction completion date
6/02	ACLs approved

III. Background

Physical Characteristics

The Bypass 601 Site is defined as an area located on the western edge of Concord, North Carolina, in which groundwater is contaminated by multiple sources. Eleven possible source areas of contamination related to battery disposal were identified in the area. They are:

- The Martin Scrap Recycling (MSR) Facility, which occupies approximately 13 acres of land and is bordered by US Highway 29/Route 601 on the west, a flea market and landfill to the north, to the east by Irish Buffalo Creek, and an unnamed tributary of the Irish Buffalo Creek to the south. Residences are located south and west of the MSR facility.
- Source Area #1 is located adjacent to Unnamed Stream #1, west of Bypass 601. This area is located in a heavily wooded steep terrain behind an auto sales dealership.
- Source Area #2 is located south of Montford Avenue and west of Bypass 601. A mobile trailer is currently on this property.
- Source Area #3 is located at 72 Sumner Avenue. A mobile trailer is currently on this property.
- Source Area #4 consists of the commercial property occupied by an abandoned flea market and is located north and adjacent to the MSR facility.
- Source Area #5 is located at a private landfill along the eastern boundary of the MSR facility.
- Source Area #6 is located behind a tire store on the corner of McGill and Bypass 601.
- Source Area #7 is the radio tower site located approximately 1/4-mile north of the MSR facility.
- Source Area #8 consists of the floodplain area south of Unnamed Stream #1.
- Source Area #9 is located south of Montford Avenue and lies southeast of Source Area #2.
- Source Area #10 is located adjacent to Unnamed Stream #2 and is bordered to the north, west, and south by Barnhardt Avenue, Groff Street, and Montford Avenue, respectively.

Land and Resource Use

The MSR Facility operated as a battery salvage and recycling facility from approximately 1966 to 1986. The property was leased after 1986 by various other operators and has been inactive since 1990. The site is currently fenced and the solidified, stabilized materials are contained within the fenced area under an impermeable cap, topped with asphalt. Future use is restricted in order to provide protection of the cap. One of the property owners operates a storage area and flower shop on the property. The current and anticipated future land use for the surrounding area is residential and commercial.

History of Contamination

The MSR facility dealt in the recovery of scrap metal, most notably lead, which was recovered from scrap vehicle batteries. The batteries were "cracked" by sawing off the tops with an electric saw. Lead plates were then removed from the batteries for reclamation.

The waste from this operation consisted of the sulfuric acid (contaminated with lead) from the batteries, and battery casings. Initially, the waste acid was collected and disposed of in a surface impoundment on the MSR property. Since rainwater and surface runoff could enter the impoundment causing it to overflow, a subsurface drain composed of perforated plastic pipe, surrounded by gravel, was installed downgradient of the surface impoundment. This was done to provide a "leach field" to prevent overflow to Unnamed Stream #1, which was approximately 150 feet from the impoundment.

In early 1982, MSR reportedly stopped using the surface impoundment and began collecting the waste acid in stainless steel holding tanks. The facility reportedly operated from 1966 to 1986. The ten other source areas were discovered during the remedial investigation. Source Area #2 and Source Area #6 were also reported to have been used for reclamation operations by Mr. Martin prior to its present location.

Initial Response

The Bypass 601 Site was proposed for the National Priorities List (NPL) on October 15, 1984, and finalized on the NPL in June 1986. A Remedial Investigation/Feasibility Study (RI/FS) completed in 1990, identified metal contamination of soils throughout the MSR facility.

A second RI/FS was conducted on the ten source areas and the groundwater. During this investigation, a removal was conducted on four of the Source Areas (1, 2, 9, and 10) that presented an immediate risk to human health. Approximately 14,000 cubic yards of contaminated soil and debris were excavated from these source areas, and then stockpiled at the MSR facility. This material was subsequently covered with a 20-mil liner.

In December 1992, the proposed plan identifying EPA's preferred remedy was presented to the public, starting the period for public comment.

Basis for Taking Action

Contaminants

Hazardous substances that have been released at the site in each media include:

Soil

Lead
Antimony
Chromium
Manganese
Vanadium
Carbon Tetrachloride
Barium

Sediment

Lead

Groundwater

Barium
Beryllium
Cadmium
Chromium
Copper
Manganese
Nickel
Lead
Vanadium
Benzene
Carbon Tetrachloride
1,2-Dichloroethane
Sulfate

Exposure to soil, groundwater, and sediment are associated with human health risks, due to exceedance of EPA's risk management criteria for either the average or the reasonable maximum exposure scenarios. Non-carcinogenic health effects and projected blood lead levels above EPA's benchmark were associated with exposure to contaminated soil and ingestion of contaminated groundwater.

IV. Remedial Actions

Remedy Selection

The ROD for the Bypass 601 Site was signed on April 20, 1993. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigation to aid in the development and screening of remedial alternatives to be considered for the ROD. The RAOs for the Bypass Site were:

- Prevent direct contact exposures to soil and sediment that contain levels in excess of the remedial action objectives;
- Prevent migration of contaminants from the soil to groundwater;

- Prevent migration of contaminants from the soil or sediment to a surface water body that would result in contamination to levels greater than the ambient water quality criteria (AWQC) of 3.2 $\mu\text{g/l}$ for lead;
- Control future releases of contaminants to ensure protection of human health and the environment; and
- Permanently and significantly reduce mobility, toxicity, or volume of characteristic hazardous waste with treatment.

The major components of the source control remedy selected in the April 20, 1993 ROD included:

1. Demolition of portions of the abandoned flea market and any standing buildings of the MSR facility and disposal at a municipal landfill;
2. Temporary relocation of an occupied trailer located on Source Area #3;
3. Excavation of onsite soils contaminated above the performance standards;
4. Onsite treatment of excavated soils via solidification/stabilization;
5. Toxicity Characteristic Leaching Procedure (TCLP) testing of solidification material; and
6. Backfilling, grading, and revegetation of excavated area and solidified material.

The major components of the groundwater remedy selected in the April 20, 1993 ROD included:

1. Extraction of groundwater across the Site that is contaminated above Maximum Contaminant Levels or the North Carolina groundwater standards, whichever are more protective;
2. Onsite treatment of extracted groundwater via precipitation and air stripping;
3. Discharge of treated groundwater to the publicly owned treatment works (POTW); and
4. Continue analytical monitoring for contaminants in groundwater.

A ROD amendment was issued on April 18, 1997. Groundwater sampling during the Remedial Design (RD) revealed that the groundwater contamination plume was not an area-wide problem as previously indicated. Instead, metal and VOC contamination in the groundwater was limited to the MSR facility and Source Areas 4 and 5. The contaminated soils from the EPA-conducted removal in 1992 along with the

contaminated soils from the PRP-conducted removal in 1996 were considered as RCRA hazardous wastes in accordance with the RCRA Land Disposal Restrictions (LDR). These materials had to be treated. An addendum to the risk assessment concluded that there was no unacceptable risk from exposure to the groundwater, and there was a direct contact risk to the soils on the MSR facility and Source Areas 4 and 5. Therefore, the primary changes documented in the ROD amendment were:

- Establishment of alternate concentration limits (ACLs) and monitored natural attenuation (MNA) instead of pump-and-treat for the groundwater.
- Treatment of excavated soils only along with capping of the MSR facility and Source Areas 4 and 5.

Deed restrictions were recommended on the MSR facility, and Source Areas 4, 5, and 6 under the authority of the State of North Carolina. These deed restrictions will ensure that the integrity of the cap will not be compromised and that no drinking water wells will be installed. Establishment of deed restrictions has not been completed, but is currently underway by the PRPs.

Remedy Implementation

In a Consent Decree (CD) signed with EPA in March 1994 and amended in August 1997, 86 Performing Settling Defendants (PSDs) agreed to perform the remedial design/remedial action (RD/RA) and pay past costs for cleaning up the site. In addition, a de minimis settlement was reached with 78 additional respondents. The RD was approved by EPA on September 29, 1997.

The Remedial Action (RA) was conducted in two phases. The first phase was the removal of contaminated soils from outlying, mainly residential properties (Source Areas 2, 3, 6, 8, and 9) and the stockpiling of these soils at the MSR facility. Approximately 16,750 cubic yards (cy) of soil and debris were excavated and transported to the MSR facility where it was covered with a liner pending treatment. The activities for this phase were initiated in September 1996 and were completed in November 1996.

The second phase of the remedial action was the solidification/stabilization of the stockpiled materials, demolition of old buildings and the construction of a cap over the MSR facility and Source Areas 4 and 5. The activities for the second phase were formally initiated on March 12, 1998 when the PSDs awarded the RA contract. The contractor conducted remedial activities as planned and EPA and the State conducted a pre-final inspection on December 17, 1998.

During this period, approximately 10,420 cy of material was treated. Another 420 tons of oversized debris was separated out and not treated. This consisted mainly of car parts, wire, industrial equipment parts, and rocks. The impermeable cap was then installed over the consolidated areas of the MSR facility, and Source Areas 4 and 5. Asphalt was placed on the top of the cap and a 6-foot high chain link fence was placed

around the edge of the pavement. The remainder of the cap was seeded. Storm water flumes were also installed to prevent erosion of the protective cover and topsoil.

The site achieved construction completion status when the Preliminary Close-Out Report was signed on March 11, 1999.

EPA and the State have determined that all RA construction activities were performed according to specifications. It is expected that groundwater contaminant levels will be reduced by natural attenuation and will continue to be below the established ACLs.

System Operation/Operation and Maintenance

The PSDs are conducting monitoring and maintenance activities according to the operation and maintenance (O&M) plan and the Performance Standards Verification Plan that were both approved by EPA on September 29, 1997. The primary activities associated with O&M include the following:

- Visual inspection of the asphaltic pavement for uneven settlement, cracking, depressions, or loss of asphalt;
- Inspection of the run-off conveyance channels for obstruction to flow, bank erosion, deterioration, excessive silting, inadequate protective vegetation or loose riprap;
- Inspection of the final cover for silting, corrosion, deterioration, blockage or clogging;
- Inspection of the drainage channels for erosion, clogging, or deterioration;
- Inspection of access roads and main entrance road for erosions, cracks, deterioration, excessive rutting, or loss of aggregate;
- Inspection of sediment control facilities for passage of sediment;
- Inspection of fencing, gates, and locks for corrosion or damage;
- Inspection of groundwater monitoring wells;
- Environmental monitoring: Quarterly monitoring of groundwater, surface water and sediment; and
- Analysis of a core sample of the solidified/stabilized material to ensure that the material does not leach contaminants above the TCLP requirements.

The primary cleanup of the Bypass Site took place during the construction phase of the Remedial Action (i.e., the stabilization of contaminated soils). The other remaining component of cleanup is the natural attenuation of groundwater, as the source of groundwater contamination in soil has been removed. Therefore, as indicated in the planned elements above, the primary O&M activities have been geared towards monitoring groundwater, surface water, sediments, and maintenance of the cap.

O&M costs include sampling and monitoring efforts and cap maintenance. The O&M costs were originally estimated in the September 1997 O&M manual to be approximately \$65,000 per year. Table 2 shows the PSD's actual O&M costs.

Table 2: Annual O&M Costs

Dates	Total Cost rounded to nearest \$1000
6 - 12/1999	\$36,000
2000	\$55,000
2001	\$62,000

V. Progress Since the Last Five-Year Review

This was the first five-year review for the site.

VI. Five-Year Review Findings

Administrative Components

Members of the PSDs and the NCDENR were notified of the five-year review. The Bypass 601 Five-Year Review team was led by Giezelle Bennett of EPA, Remedial Project Manager (RPM) for the Bypass 601 Site. Diane Barrett, the Community Involvement Coordinator (CIC) conducted the interviews and David Mattison of the NCDENR assisted in the review as the representative for the support agency.

The components of the review included:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection;
- Local Interviews; and
- Five-Year Review Report Development and Review.

Community Involvement

Activities to involve the community in the five-year review were initiated with a meeting between the RPM and the CIC for the Bypass 601 Site. A notice was sent to two local newspapers, the *Independent Tribune* and the *Charlotte Observer-Cabarrus Neighbor*, that a five-year review was to be conducted.

Document Review

This five-year review consisted of a review of relevant documents including monitoring data. Applicable groundwater cleanup standards, as listed in the 1993 Record of Decision, were reviewed.

Data Review

Groundwater Monitoring

Groundwater monitoring has been conducted at the Site since the late 1980s. In general, most contaminants were detected at a higher concentration following the remedial action activities. Subsequently, most concentrations have decreased (table 3). Table 3 shows the maximum concentrations of each contaminant. All of these maximums are taken from only three monitoring wells indicating a very localized groundwater plume.

**Table 3: Quarterly Comparison of Groundwater Concentrations
(Maximums Detected)**

Contaminant	Concentration In ppb									
	6/99	9/99	12/99	4/00	7/00	10/00	1/01	3/01	6/01	10/01
1,2-Dichloroethane	15	16	16	12	7J	11	11	8J	4J	NA
Carbon tetrachloride	47J	20	22	25	19	19	21	19	25	NA
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	47	26	28.1	29.3	22	15	15	12	45	12.5

Surface Water and Sediment Monitoring

Quarterly analysis of surface water and sediment samples have been taken in the two surface water bodies adjacent to/downgradient from the Site; Unnamed Stream #1 and Irish Buffalo Creek. No VOCs have been detected in either surface water body. As shown in Table 4 below, lead has been detected in both surface water bodies at levels near or below the Federal Ambient Water Quality Criteria (AWQC) for protection of aquatic life of 3.5 ppb and the NC Criteria for Class C Fresh Waters of 25 ppb.

Sediment samples peaked immediately following the remedial action, but have consistently dropped. The remediation goal for lead in sediments is 35 ppm.

Table 4: Quarterly Comparison of Surface Water and Sediment Concentrations (Maximums Detected)

Media	Sample Location	Concentration of Lead (ppb - surface water; ppm - sediment)									
		6/99	9/99	12/99	4/00	7/00	10/00	1/01	3/01	6/01	10/01
Surface Water	Unnamed Stream	ND	ND	ND	2.5B	ND	ND	ND	ND	2.2J	ND
	Irish Buffalo Creek	ND	ND	ND	ND	ND	ND	ND	ND	3.7J	ND
Sediment	Unnamed Stream	117	35.8	43	21.4	21.8	19.1	10.3	14	12	4
	Irish Buffalo Creek	8.3	6.4	5.4	5.9	6.4	6.2	19.7	4.4	9.5	3.1

Alternate Concentration Limits (ACLs)

ACLs have been established for the Bypass 601 Site. ACLs were applicable because: there are known and projected points of entry of groundwater into surface water; there is or will be no statistically significant increase of constituents from groundwater to surface water at the point of entry; and the remedial action includes enforceable measures that will preclude human exposure to the contaminated groundwater at any point between the facility boundary and all known and projected points of groundwater into surface water.

ACLs were developed and approved for two VOCs and lead. ACLs were developed for each contaminant at each well where it was detected and for discharge into either adjacent stream; the Unnamed Stream and Irish Buffalo Creek. ACLs are shown in Table 5.

TABLE 5
ALTERNATE CONCENTRATION LIMITS (GW) - ppb

WELL	CARBON TETRACHLORIDE		1-2 DICHLOROETHANE		LEAD	
	Stream	Creek	Stream	Creek	Stream	Creek
SMW-04	83	5,900	ND	ND	ND	ND
DMW-04	83	5,900	ND	ND	ND	ND
SMW-01	ND	ND	23	1,400	ND	ND
SMW-03	ND	ND	23	1,100	ND	ND
DMW-03	ND	ND	23	1,100	58	2,600
SMW-05	ND	ND	35	1,300	88	3,300
DMW-05	ND	ND	35	1,300	88	3,300
DMW-06	ND	ND	23	85	29	7,000
ROD REMEDIAL ACTION OBJECTIVE	1		1		15	

Stream - Unnamed Stream #1 Creek - Irish Buffalo Creek ND - Contaminant not detected in well

Site Inspection

An inspection of the Site was conducted on May 2, 2002 by the RPM and the State Project Manager. The purpose of the inspection was to assess the protectiveness of the remedy, including the presence of fencing to restrict access, the integrity of the cap and the integrity of the monitoring wells.

With the exception of some minor erosion, the Site was maintained very well. Fencing was in place, the cap showed no signs of compromise, and the monitoring wells were intact and locked, with no signs of damage. The PRP representative indicated that reseedling in the fall will address the erosion concern.

Interviews

The following individuals were contacted by telephone as part of the five-year review:

- Donald Whitaker
- Mike Love
- Melvin & Elizabeth Thompson
- Mrs. Ledroell

- Margaret Sifford
- Ray Cauthen
- L.F. Barbee, Jr.
- Mrs. Dorton
- O.L. Crayton
- Jerome Henderson

All individuals live or work near the Site and were notified of the five-year review during the telephone conversation. Everyone who had knowledge about the site was very pleased with the cleanup and thought that EPA had done an adequate job in keeping the public informed about the activities at the Site.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the ROD, as amended. The solidification/stabilization and capping of contaminated soils and sediments has achieved the remedial objectives to: prevent direct contact exposures to soil and sediment that contain levels in excess of the remedial action objectives; prevent migration of contaminants from the soil to groundwater; prevent migration of contaminants from the soil or sediment to a surface water body that would result in contamination to levels greater than the ambient water quality criteria (AWQC) of 3.2 $\mu\text{g/l}$ for lead; control future releases of contaminants to ensure protection of human health and the environment; and permanently and significantly reduce mobility, toxicity, or volume of characteristic hazardous waste with treatment.

Operation and maintenance of the cap has been effective. O&M annual costs are consistent with the original estimates and there are no indications of any difficulties with the remedy. The monitoring well network provides sufficient data to assess the quality of the groundwater.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions at the site that would affect the protectiveness of the remedy.

Changes in Standards and To Be Considereds

The ARARs for soil contamination cited in the ROD have been met. The ACLs have been established for groundwater. Evaluation of natural attenuation of the three constituents detected in the groundwater is due to be completed within the next year.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the amended Human Health Risk Assessment included both current exposures and potential future exposures. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD, as amended. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. The ARARs for soil contamination cited in the ROD has been met. There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

ISSUE	CURRENTLY AFFECTS PROTECTIVENESS (Y/N)	AFFECTS FUTURE PROTECTIVENESS (Y/N)
Deed Restrictions	Y	Y

IX. Recommendations and Follow-Up Actions

Issue	Recommendations Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Y/N)	
					Current	Future
Deed Restrictions	Finalize/Implement Deed Restrictions across the entire Site	PRP	NC DENR	September 2004	Y	Y

X. Protectiveness Statement

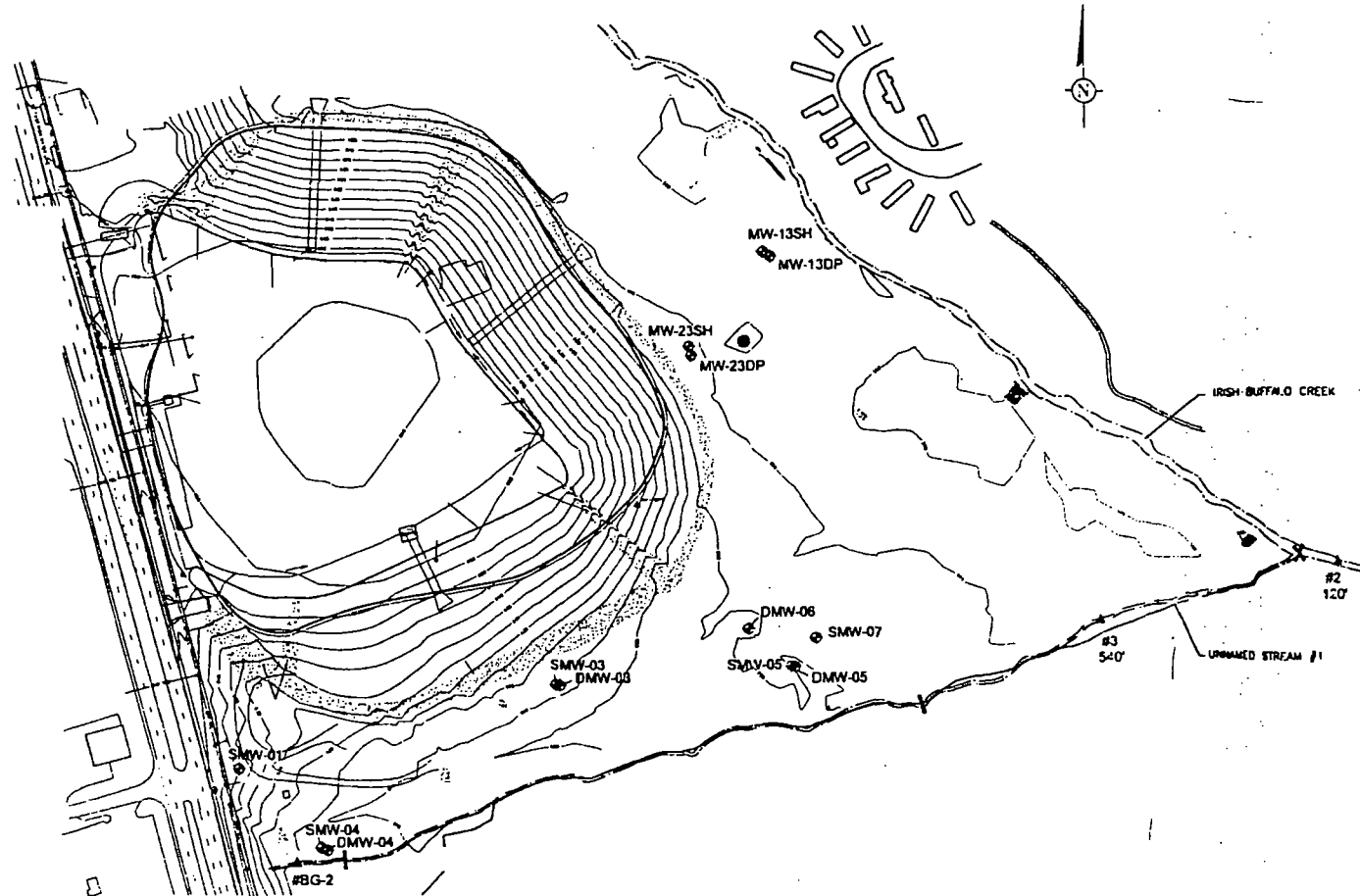
All threats at the site have been addressed through solidification/stabilization and capping of contaminated soil and sediments and the installation of fencing. Deed restrictions will ensure that the integrity of the cap will not be compromised and that no drinking water wells will be installed. The remedy is protective of human health and the environment.

XI. Next Review

The next review for the Bypass 601 Site is required by June 2007, five years from the date of this review.

Attachment A
Site Map

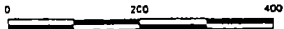
- ▲ BG-1 NORTH OF MCGILL AVENUE
▲ #1 STARTING 300-FT SOUTH OF MCGILL AVENUE FOR A DISTANCE OF 540-FT



LEGEND

- ▲ SURFACE WATER/SEDIMENT SAMPLE
● MONITOR WELL

SCALE IN FEET



ARCADIS GERAGHTY & MILLER



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PRJ. MANAGER:
A. PINNIE

CHECKED BY:

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PROJECT NUMBER: NC000578.0006.00001

NOTES:

DRAWING:

SITE1

DATE:
05 JAN 01

601 BYPASS

SITE
LAYOUT

FIGURE:

1

Attachment B
List of Documents Reviewed

Documents Reviewed

CERCLA Record of Decision for Bypass 601 Site; Concord, North Carolina, April 20, 1993.

CERCLA Amendment to the April 1993 Record of Decision for Bypass 601 Site; Concord, North Carolina, April 18, 1997.

Post Remedial Action Monitoring, Bypass 601 Site, Concord, North Carolina, January 17, 2002, ARCADIS G&M.

Remedial Design Work Plan, Bypass 601 Site, Concord, North Carolina, June 28, 1995, Geraghty and Miller, Inc.

Final (100%) Design, Remedial Action Work Plan, Bypass 601 Site, Concord, North Carolina, September 22, 1997, Geraghty and Miller, Inc.

Final (100%) Design, Remedial Design Report, Bypass 601 Site, Concord, North Carolina, September 22, 1997, Geraghty and Miller, Inc.

Revised Alternate Concentration Limit Determination, Bypass 601 Site, Concord, North Carolina, March 12, 2002, Geraghty and Miller, Inc.

Remedial Action Report, Bypass 601 Site, Concord, North Carolina, June 21, 1999, ARCADIS G&M.

Interim Removal Action Field Summary Report, Bypass 601 Site, Concord, North Carolina, March 28, 1997, Geraghty and Miller, Inc.

Attachment C
Applicable or Relevant and Appropriate Requirements (ARARs)

Chemical-Specific ARARs, Bypass 601 Site, Concord, North Carolina

Standard, Requirement, Criteria, or Limitation	Citation	Description and Comment
<u>Federal</u>		
Safe Drinking Water Act		
National Primary Drinking Water Standards, Maximum Contaminant Levels (MCLs)	40 CFR Part 141	Legally-enforceable federal drinking water standards that are applicable requirements for existing or potential future drinking water sources. Establishes enforceable health-based standards for specific contaminants that have been determined to adversely effect human health.
National Primary Drinking Water Standards, MCL Goals (MCLGs)	40 CFR Part 141	Establishes drinking water quality goals set at levels of no known or anticipated adverse health effects with an adequate margin of safety. MCLGs for organic and inorganic contaminants are relevant and appropriate to groundwater.
National Secondary Drinking Water Standards	40 CFR Part 143	Establishes welfare-based standards for public water systems for specific contaminants or water characteristics that may affect the aesthetic qualities of drinking water. Secondary MCLs are non-enforceable limits intended as guidelines for use by States in regulating water supplies. The secondary MCLs are relevant and appropriate.
Clean Water Act		
Ambient Water Quality Criteria	40 CFR Part 131	Ambient water quality criteria provide levels of exposure from drinking the water and consuming aquatic life that are protective of public health. The criteria also provide acute and chronic concentrations for protection of freshwater and marine organisms. Water criteria for organic and inorganic contaminants are relevant and appropriate to surface water at this site.
Clean Air Act		
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Establishes primary (health-based) and secondary (welfare-based) air quality standards for contaminants emitted from a major source of air emissions. This requirement is relevant and appropriate for soil treatment at the site.
National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	40 CFR Part 61	Provides emissions standard for hazardous air pollutants for which no ambient air quality standard exists. This requirement is relevant and appropriate for soil treatment at the site.
<u>State</u>		
Surface Water Standards: Monitoring	15A NCAC 2B	Sets criteria for water quality for the various classes of water based on toxicity to aquatic organisms and human health. Water criteria are relevant and appropriate to surface water at this site.
Air Pollution Control Requirements	15A NCAC 2D	Establishes a system for classifying air pollution sources and assures compliance with emission control standards. Sets forth ambient air quality standards which establishes certain maximum limits on parameters of air quality considered desirable for the preservation and enhancement of the quality of the State's air resources. This requirement is relevant and appropriate for treatment of stockpiled material and handling of soil during construction of the cap.
Groundwater Classification and Standards	15A NCAC 2L	Establishes a series of classification and water quality standards applicable to the groundwaters of the State. This rule is intended to maintain and preserve the quality of the groundwaters, prevent and abate pollution and contamination of the waters of the State, protect public health, and permit management of the groundwaters for their best usage. This requirement is relevant and appropriate to contaminated groundwater at this site.

Location-Specific ARARs, Bypass 601 Site, Concord, North Carolina

Standard, Requirement, Criteria, or Limitation	Citation	Description and Comment
<u>Federal</u>		
Resource Conservation and Recovery Act (RCRA), as amended		
RCRA Location Standards	40 CFR Part 264.18	A treatment, storage, and disposal facility must be designed, constructed, operated, and maintained to avoid washout on a 100-year floodplain. This requirement is relevant and appropriate since the 100-year floodplain exists within the vicinity of the site. Implementation of soil and groundwater alternatives will not involve construction within the floodplain.
Floodplain Management	Executive Order 11988; 40 CFR Part 6.302	Actions that are to occur in floodplain should avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial value. Implementation of soil and groundwater alternatives will not involve construction within the floodplain that borders the site.
Clean Water Act		
Guidelines for Specification of Disposal Sites for Dredged or Fill Material	40 CFR Part 230	The Clean Water Act regulates the discharge of dredged or fill material into U.S. waters, including wetlands. The purpose is to ensure that proposed discharges are evaluated with respect to impact on the aquatic ecosystem. It also requires permit for discharge of dredged or fill material into aquatic environment. Implementation of soil and groundwater alternatives will not involve the discharge of fill material into an aquatic environment.

Standard, Requirement, Criteria, or Limitation	Citation	Description and Comment
<i>Soil Treatment/Onsite Disposal and Capping</i>		
<u>Federal</u>		
Resource Conservation and Recovery Act (RCRA), as amended		
Identification and Listing of Hazardous Waste	40 CFR Part 261	Defines those solid wastes that are subject to regulations as hazardous wastes under 40 CFR Parts 262 through 265, 268, 270 through 271, and 124 and which are subject to the notification requirements of Section 3010 of RCRA. Of specific importance are Subparts B (Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste) and C (Characteristics of Hazardous Waste). In addition, Part 261.24 under Subpart C sets forth the maximum concentration of contaminants for the toxicity characteristic (toxicity characteristic leaching procedure). This requirement is applicable in that all treated material will have to pass TCLP criteria before placement back onsite for capping.
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR Part 264	Establishes minimum national standards defining the acceptable management of hazardous wastes for owners and operators of facilities that treat, store, or dispose of hazardous wastes. In particular, Subpart N (Landfills) applies to owners and operators of facilities that dispose of hazardous waste in landfills, as well as specifies the requirements for landfill cover design and maintenance. This requirement is relevant and appropriate for the construction of the cap at the site.
Land Disposal Regulations	40 CFR Part 268	Establishes restrictions on land disposal of untreated hazardous waste and provides treatment standards for hazardous waste. This requirement is relevant and appropriate for disposal of the untreated and treated material onsite that will be capped.
Hazardous Waste Permit Program	40 CFR Part 270	Establishes provisions covering basic permitting requirements. Any activity involving the treatment or containment of hazardous waste is subject to these permitting requirements. This requirement is relevant and appropriate for the solidification of excavated material stockpiled onsite.
Clean Air Act		
National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50	Establishes primary and secondary air quality standards for compounds emitted from a major source of air emissions. The principal application of these standards is during remedial activities resulting in exposure through dust and vapors. This requirement is applicable during the treatment of stockpiled material and handling of soil during construction of the cap.
Occupational Safety and Health Administration	29 CFR 1910 Part 120	This rule provides safety requirements for site workers during remedial activities. These requirements are applicable to the soil remedial action being implemented at the site.
<u>State</u>		
Hazardous Waste Management	NCAC 13A	Administration of the hazardous waste management program for the state. Adopts the regulation of hazardous wastes as presented under 40 CFR Parts 260 through 266, 268, 270 through 271, 273, and 279. In particular, Subsection .0009 applies to owners and operators of hazardous waste treatment, storage, and disposal facilities and specifies the requirements for landfill cover design and maintenance. This requirement is "to be considered".
Air Pollution Control Requirements	15A NCAC 2D	Establishes a system for classifying air pollution sources and assures compliance with emission control standards. Sets forth ambient air quality standards which establishes certain maximum limits on parameters of air quality considered desirable for the preservation and enhancement of the quality of the state's air resources. This requirement is applicable during the treatment of stockpiled material and handling of soil during construction of the cap.

Standard, Requirement, Criteria, or Limitation	Citation	Description and Comment
<u>Federal</u>		
<u>Other</u>		
Occupational Safety and Health Administration	29 CFR 1910 Part 120	This rule provides safety requirements for site workers during remedial activities. These requirements are applicable to the groundwater remedial action being implemented at the site.
<u>State</u>		
Well Construction Standards	15A NCAC 2C	Governs the location, construction, repair, and abandonment of wells and the installation and repair of pumps and pumping equipment. This requirement is relevant and appropriate to the abandonment of wells at the site and would be appropriate for the groundwater extraction system.
Air Pollution Control Requirements	15A NCAC 2D	Establishes a system for classifying air pollution sources and assures compliance with emission control standards. Sets forth ambient air quality standards which establishes certain maximum limits on parameters of air quality considered desirable for the preservation and enhancement of the quality of the State's air resources. This requirement is relevant and appropriate if groundwater is treated via air stripping.

Attachment D
State Concurrence

North Carolina
Department of Environment and Natural
Resources



Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director

June 17, 2002

Ms. Giezelle Bennett
Remedial Project Manager
Superfund Branch, Waste Management Division
US EPA Region IV
61 Forsyth Street, 11th Floor
Atlanta, Georgia 30303

RE: State Concurrence with the First Five-Year Review Report
Bypass 601 Groundwater Contamination NPL Site
Concord, Cabarrus County

Dear Ms. Bennett:

The State of North Carolina has reviewed the attached First Five-Year Review Report for the Bypass 601 Groundwater Contamination National Priorities List (NPL) Site. The State of North Carolina concurs with the First Five-Year Review Report, subject to the following conditions.

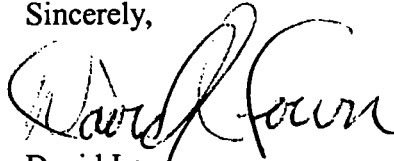
1. State concurrence on the First Five-Year Review Report and the selected remedy for the site is based solely on the information contained in the subject First Five-Year Review Report. Should the State receive new or additional information that significantly affects the conclusions or remedy selection contained in the 1990 Record of Decision (ROD), the 1993 ROD, the 1997 Amendment to the ROD, or this First Five-Year Review Report, it may modify or withdraw this concurrence with written notice to the United States Environmental Protection Agency (US EPA) Region IV.
2. State concurrence on this First Five-Year Review Report in no way binds the State to concur in future decisions or commits the State to participate, financially or otherwise, in the clean up of the site. The State reserves the right to review, overview, comment, and make independent assessment of all future work relating to this site.
3. If, after remediation is complete, the total residual risk level exceeds 10^{-6} , the State may require deed recordation/restriction to document the presence of residual contamination and possibly limit future use of the property as specified in NCGS 130A-310.8.

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone: 919-733-4996 \ FAX: 919-715-3605 \ Internet: www.enr.state.nc.us

Ms. Giezelle Bennett
June 17, 2002
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The State of North Carolina appreciates the opportunity to comment on First Five-Year Review Report for the subject site. If you have any questions or comments, please feel free to contact me at (919) 733-2801, extension 291.

Sincerely,

A handwritten signature in black ink, appearing to read "David Lowen", written in a cursive style.

David Lowen
Acting Remediation Branch Head
Superfund Section

Attachment

cc: Phil Vorsatz, NC Remedial Section Chief
Jack Butler, Chief NC Superfund Section
David Mattison, NC Superfund Section